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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person or persons having title to this patent the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

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United States Patent [19]

Calandra, Jr. et al.

[11] Patent Number: **5,292,209**
 [45] Date of Patent: **Mar. 8, 1994**

[54] BEARING PLATE

[75] Inventors: Frank Calandra, Jr., Pittsburgh; John C. Stankus, Canonsburg; Eugene H. Stewart, Pittsburgh, all of Pa.

[73] Assignee: Jennmar Corporation, Pittsburgh, Pa.

[21] Appl. No.: 61,841

[22] Filed: **May 14, 1993**

[51] Int. Cl. 5 **F21D 21/00**

[52] U.S. Cl. **405/302.1; 405/259.1; 405/288; 411/545**

[58] Field of Search **405/259.1-259.6, 405/288, 302.1; 411/531, 545**

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Primary Examiner—Dennis L. Taylor
 Attorney, Agent, or Firm—Stanley J. Price, Jr.

[57] ABSTRACT

An elongated channel member for supporting the surface of an underground rock formation includes a base portion with a bearing surface for contacting the rock strata and an opposite surface having a longitudinally extending central rib and flanged edges for resisting deflection and bending of the channel member under the load of the rock strata. A plurality of openings spaced a preselected distance apart extend through the central rib. A bearing plate is positioned in overlying abutting relation with each opening in the channel member. The bearing plate includes embossed areas and longitudinally flanged edges that are complementary in shape with the central rib and flanges on the channel to securely engage the bearing plate on the channel member. Thus, the bearing plate engages the channel member to restrain longitudinal and lateral movement of the bearing plate on the channel member and stiffen the channel member to resist bending. An anchor bolt extends through the aligned openings in the bearing plate and channel member into a bore hole drilled in the rock formation. Anchoring the bolt in the bore hole compresses the bearing plate against the channel member to urge the channel member into compressive relation with the surface of the rock formation to support the rock formation.

20 Claims, 3 Drawing Sheets

